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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,829	12/30/2003	Paul A. Hoisington	09991-148001	9375

26161 7590 05/02/2006

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EXAMINER

DO, AN H

ART UNIT PAPER NUMBER

2853

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

Office Action Summary

Application No.

10/749,829

Applicant(s)

HOISINGTON ET AL.

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 16-18, 20 and 23-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-18, 20 and 23-28 is/are allowed.
- 6) ☒ Claim(s) 1-4, 8 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/13/06</u> . | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
6) <input type="checkbox"/> Other: _____. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

DETAILED ACTION

The Response filed on 13 February 2006 has been acknowledged.

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2853

3. Claims 1, 4, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamori et al (US 4,358,781).

Yamamori et al disclose in Figures 1 and 3A the following claimed features:

Regarding claim 1, a drop ejection device (Figure 1), comprising: a flow path (connecting channel 18) in which fluid is pressurized to eject drops from a nozzle opening (22), a piezoelectric actuator (24) for pressurizing said fluid, and one or more waste fluid control apertures (20) proximate (column 3, lines 60-61) the nozzle opening (22), the aperture (20) being in communication with a vacuum source (12).

Regarding claim 4, wherein the control apertures (Figure 3A shows air chamber portions 15a and 15b) are in communication (via nozzle 12) with the flow path (connecting channel 18) in which fluid is pressurized.

Regarding claim 10, further including a nonwetting coating (annular surface 29) proximate the nozzle opening (20).

Regarding claim 11, wherein the flow path (connecting channel 18), nozzle opening (20), and control aperture (Figure 3A shows air chamber portions 15a and 15b) are defined in common body (Figure 1, head housing 10a).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2853

5. Claims 2, 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamori et al (US 4,358,781) in view of Le et al (US 4,613,875).

Yamamori et al disclose the claimed invention except for reciting the fluid control apertures are spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less; and the width of the nozzle opening is about 200 microns or less.

Le et al teach in the Table in column 7 that the fluid control apertures (24) are spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less (element C); and the diameter of the nozzle opening (23) is about 30-45 (element A) microns which is within the claimed range of 200 microns or less.

It would have been obvious to one having ordinary in the art at the time the invention was made to have the fluid control apertures spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less; and the diameter of the nozzle opening about 200 microns or less, as taught by Le et al into Yamamori et al, for the purpose of obtaining the optimal results (column 7, lines 54-60).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamori et al (US 4,358,781) in view of Howkins (US 4,459,601).

Yamamori et al disclose the claimed invention except for reciting the body is a silicon material.

Howkins teaches in Figure 1 the body (34) is a silicon material (column 5, lines 16-17).

It would have been obvious to one having ordinary in the art at the time the invention was made to have the body made of a silicon material, as taught by Howkins into Yamamori et al, for the purpose of obtaining the flexibility and tensile strength over a wide temperature range.

Response to Arguments

7. Applicant's arguments filed 13 February 2006 have been fully considered but they are not persuasive. Applicant argued that Yamamori et al did not disclose a drop ejection device including an aperture being in community with a vacuum source. However, this argument is not found persuasive for the reason that Yamamori et al shows in Figure 1 a drop ejection device (Figure 1) including an aperture (20) being in community with a vacuum source (12). Applicant further argued that the combination of Yamamori et al and Le et al did not teach the spacing between control apertures and nozzle opening is about 200% to about 1000% of the nozzle opening width or less, and the nozzle opening width is about 200 microns or less. Again, this argument is not persuasive. As shown above, Le et al teach in the Table in column 7 that the fluid control apertures (24) are spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less (element C); and the diameter of the nozzle opening (23) is about 30-45 (element A) microns which is within the claimed range of 200 microns or less. Applicant finally argued that the combination of Yamamori et al and Howkins did not teach the body is a silicon material. This argument is not found persuasive because Howkins teaches in Figure 1 the body (34) is a silicon material (column 5, lines 16-17).

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Allowable Subject Matter

9. Claims 16-18, 20 and 23-28 are allowed over prior arts as discussed in previous Office Action.

10. Claims 5-7 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
April 27, 2006



An H. Do
Examiner
Art Unit 2853